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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,268	12/02/2003	Daisuke Hirono	018842.1282	5546
24735	7590	02/16/2007		
BAKER BOTTS LLP C/O INTELLECTUAL PROPERTY DEPARTMENT THE WARNER, SUITE 1300 1299 PENNSYLVANIA AVE, NW WASHINGTON, DC 20004-2400			EXAMINER MCCLLOUD, RENATA D	
			ART UNIT	PAPER NUMBER
			2837	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		02/16/2007	ELECTRONIC	

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<b>Office Action Summary</b>	Application No. 10/725,268	Applicant(s) HIRONO, DAISUKE	
	Examiner Renata McCloud	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/29/06.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-8, 10-12, 14, 15 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) 2, 6, 8 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 7, 11, 12, 14, 15, 17-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: the equation for (Lo) does not appear in par 0045 as described in Applicant's arguments. There appears to be an error.

Appropriate correction is required.

### ***Claim Objections***

2. Regarding claim 1,3,4 the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 3-5, 7, 11, 12, 14, 15, 17-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the loss of the switching element" in the second to the last paragraph. There is insufficient antecedent basis for this limitation in the claim. It is unclear which loss is being referred to.

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Claim 4 recites the limitation "the loss calculated " in the second to the last paragraph. There is insufficient antecedent basis for this limitation in the claim. It is unclear which loss is being referred to.

Claims 1,3,4 recite the limitation "the equation". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1,5,7,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (US 5068777) in view of Takeda (US 5923135)

**Claim 1:** Ito teaches a motor control system comprising junction temperature calculating device for calculating a junction temperature of a switch of a converter including a temperature sensor (fig. 1:800) detecting the temperature at a switching element, wherein the junction temperature is determined from an equation (col. 6: eqn 4) wherein  $T_a$  is the measured temperature at a switch (col. 6:5-6),  $R_{th}$  is the thermal resistance (col. 6:15-16), current loss  $P_{on} \cdot (I_o f_o)$  and switching loss  $P_{sw} \cdot (I_o f_c)$  (col. 6:17-31) and junction temperature reducing element for comparing the junction with a preset temperature limit (col. 6:38-59) and for performing junction temperature reduction by reducing the switching loss  $P_{sw} \cdot (I_o f_c)$  (col. 6:50-59) to make the junction temperature equal to or less than the temperature limit when the junction temperature reaches the temperature limit (col. 6:52-59). Ito does not teach making the

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temperature equal to or less than the temperature limit when the junction temperature exceeds the temperature limit. Takeda teaches making the temperature equal to or less than the temperature limit when the junction temperature exceeds the temperature limit (col. 2:30-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Ito to lower the temperature as taught by Takeda in order to prevent overloading of the switches.

**Claims 5,7:** Ito teaches the junction temperature reducing means carries out the reducing by reducing the frequency or reducing the current (col. 6:50-59). Takeda teaches the junction temperature reducing means carries out the reducing by reducing the frequency or reducing the current (col. 5:48-55, col. 4:66-5:3).

7. Claims 3,4,11,12,14,15, 17,18-22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (US 5068777) in view of Stuart (US 5844399)

**Claim 3,4:** Ito teaches a motor control system comprising junction temperature calculating device for calculating a junction temperature of a switch of a converter including a temperature sensor (fig. 1:800) detecting the temperature at a switching element, wherein the junction temperature is determined from an equation (col. 6: eqn 4) wherein  $T_a$  is the measured temperature at a switch (col. 6:5-6),  $R_{th}$  is the thermal resistance (col. 6:15-16), current loss  $P_{on} \cdot (I_o f_o)$  and switching loss  $P_{sw} \cdot (I_o f_c)$  (col. 6:17-31) and junction temperature reducing element for comparing the junction with a preset temperature limit (col. 6:38-59) and for performing junction temperature reduction by reducing the switching loss  $P_{sw} \cdot (I_o f_c)$  (col. 6:50-59) to make the junction temperature equal to or less than the temperature limit when the junction temperature reaches the temperature limit (col. 6:52-59) loss calculating means calculating the loss of the switching element of the converter when the temperature detected is

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less than or equal to the predetermined temperature (col. 2: 54-63; 6:17-59). Ito does not teach making the temperature equal to or less than the temperature limit when the junction temperature exceeds the temperature limit or loss reducing means comparing the loss calculated by the loss calculating means with a loss limit when the temperature detected by the temperature detecting means is less than or equal to the predetermined temperature and for performing loss reduction processing to make the loss less than or equal to the loss limit when the loss exceeds the limit. Stuart teaches junction temperature reducing means for comparing the junction with a preset temperature limit and for performing junction temperature reduction to make the junction temperature equal to or less than the temperature limit when the junction temperature exceeds the temperature limit (col. 10:30-38); loss calculating means for calculating a loss of a switching element when the temperature is equal to or less than a limit and for performing loss reduction to make the loss equal to or less than a loss limit when the loss exceeds the limit (col. 10:30-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Ito control the loss as taught by Stuart in order to prevent overloading of the switches.

**Claims 11,12,14,15:** Ito teaches the junction temperature reducing means carries out the reducing by reducing the frequency or reducing the current (col. 6:50-59). Stuart teaches the junction temperature reducing means carries out the reducing by reducing the frequency or reducing the current (col. 10:30-38, 53-56).

**Claim 17,18-22:** Ito teaches the junction temperature reducing means carries out the reducing by reducing the frequency or reducing the current (col. 6:50-59). Stuart teaches the loss reducing means carries out loss reduction by reducing the frequency or reducing the current (col. 10:30-38, 53-56).

***Response to Arguments***

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 5:30 am - 2pm.

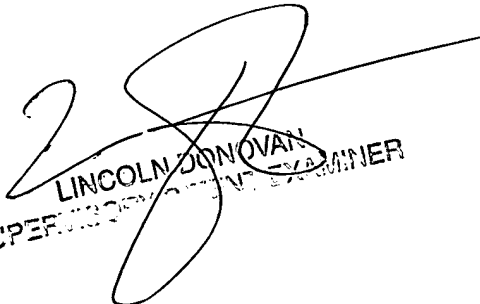
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Renata McCloud  
Examiner  
Art Unit 2837

rdm

  
LINCOLN DONOVAN  
SUPERVISOR/EXAMINER